

## **Rationale: 1996 Greenpeace Amchitka Rad Recon**

- Goals:** This study was designed to detect radioactive leakage from one or more of the three underground nuclear explosions on Amchitka to...
- commemorate Greenpeace's 25th anniversary founding in protest of the last of those three explosions.
  - verify fastest-pathway geo-hydrologic conceptual models that predict a large fraction of underground nuclear explosions exceeding 10KT yield — in wet sites — leak readily detectable, long-lived radioactivity to the open environment in less than a decade.
  - demonstrate the scientific bankruptcy underpinning the American nuclear weapons establishment.

**Approach:** Given experience with geo-hydrologic models of rad leakage, given agency admissions of tritium (and other) radionuclides in groundwater from Long Shot and the mechanical containment breach of the huge (5000KT) Cannikin explosion, and given varied sampling experience coupled to a routine analytical protocol of monitoring low-level, artificial gamma radioactivity in estuarine and terrestrial biota (NMM); a 95% confidence of detecting long-lived radioactive (such as Co-60 or excessive Cs-137) was anticipated, along with a 50% chance of detection of a dramatic radionuclide (such as a transuranic).

Given almost complete lack of confidence in published government scientific conclusions (vs. results), the field effort was equipped with a range of analytic and sampling equipment and was allowed 5 days in which to assess the general situation, devise site-specific models of leakage, and sample biota from surface waters and seeps near the three GZs.

The in-field approach sought to retrace the AEC's steps, to "walk the walk" from Long Shot to Milrow to Cannikin, and thus to conceptualize the reality of nuclear weaponry on Amchitka by the time the party sampled Cannikin, the largest and most important site.

**Method:** A model of local, blast-induced fracture, partly thermally-driven geo-hydrologic circulation allowed focused search for candidate seeps to sample for leakage. Because of experience with terrestrial mosses and marine algae as sample media, the abundance of aquatic mosses and algae was attractive. In-field tritium analysis failed due to cocktail clouding.

Because of this sharp sample focus and the study goals, "throw away" samples were avoided. Every potential sample was scrutinized according to what it might prove and why, its chance of positive results, what would be learned from negative results, and sample quality relative to analytical protocol.

Because of scant time and resources, a limited, devil's-advocate approach to daily planning was employed.

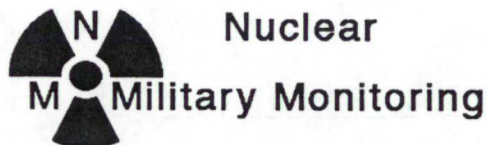
Biological samples were carefully, repeatedly rinsed in-field to eliminate soil which would decimate the sensitivity of radiological analyses on ashed material.



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a scientific campaign of the Tides Center (San Francisco)





"...the truth is leaking out."

## **Rationale: 1997 Proposed Amchitka Rad Follow-up Study**

**Goals:** The proposed study follows-up the 1996 recon to...

- sharpen recon results and conclusions by (a) collecting/prepping better samples in the same and comparable locations and (b) sampling selected "background" samples to completely rule out global fallout as a source of detected radioactivity.
- extend and improve this study by careful extensions to scope the apparent rad leakage problem: >>Cannikin Lake bottom seeps. >>White Alice shoreline seeps. >>Milrow and other recons. >>A few other biota types to evaluate food chain pathways. This should yield a sample or two with levels of radioactivity tens to hundreds of times what has been reported.
- tie the leakage question into the framework of ongoing agency rad sampling by simultaneous sampling of selected, historic baseline points.

**Approach / Method:** The proposed study should make the greatest feasible use of experience and knowledge gained from all prior work applicable to the 1997 study goals with special attention to participation of concerned parties having particular interests in the results and conclusions.

As with the 1996 recon, the 1997 study should allow the team full responsibility for deciding by consensus on the specifics of the work to be done within pre-established goals and guidelines.

A major strength of the proposed study is diverse participation, allowing real-time, productive, scientific devil's advocacy within a setting of teamwork based on shared goals. But this strength will become a management problem unless it is resolved in early planning stages.

Success then flows from establishing good management to take advantage of team diversity; choosing highly qualified, energetic, and dedicated team members; and providing enough opportunity and sufficient resources for them to achieve the study goals.

Because of the multiple study objectives, most of the necessary sample specification in the field can be done by separate groups, concurrently. All members need only be able to participate in particular "joint" sampling events deemed crucial to validate particular scientific, political, and funding concerns of the participants. This approach allows strategic parallelism, decimating costs.

Because of the differences in kind of study goals, some focus will inevitably be lost. This loss of focus all too easily leads either to broadening and dilution of the investigative domain or to loss of attention to sample detail and quality. Thus, organization, management, trust, and teamwork are crucial.

Because of the diverse participation in this study, agreement on the usual parts of the study report up through results is expected, but there will surely be substantive disagreement beginning with conclusions. Thus, the study report should be written by consensus except for Conclusions, Recommendations, and Summary sections — to be provided separately by each participant.

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